SNS Electronic Logbook

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Core Developers

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Motivation

We needed a tool for logging and communicating SNS operations. The goal was to have an electronic logbook (ELog) that could be available on the web in advance of the October 2002 Front End commissioning. In May 2002, we began investigating logbooks from other labs. The key motivations for creating our own logbook were:

- Integration with our existing database
- Ease of adding our own features
- Wanted a J2EE solution (maintenance)
- Wanted to store 100% of information in a relational database (backup, portable, searchable, performance, flexible, extensible)

Initial User Requirements

- Multiple Logbooks
- View and edit entries from any standard web browser
- Easy for anyone to use with little help
- Maintain user settings (e.g. bookmarks, logbook)
- Password security
- Automatically time stamp and sign entries
- Support categories for labeling entries
- Allow user to add images and attachments
- Support threaded entries
- Display entries by days
- Allow searching by multiple criteria
- Publish entries for immediate viewing
- Preview release in mid July and production release for Front End commissioning by October 29, 2002

Technical Requirements

- J2EE deployment for portability and maintenance
- 100% of data to be held in a relational database
- Browser Independence (Standard HTML 4 with no JavaScript or plugin dependence, etc.)
- Integration with our present data
- Handle multiple users with concurrent database access
- Scalable to handle growing use
- Support individual database log-in for each user
- Flexibility and extensibility
- MVC architecture with data abstraction
- Affordable licensing terms
- Develop locally with only a part time effort

Review Existing Logbooks

We reviewed existing logbooks from other labs:

- BNL
- CESR
- Fermilab
- JLab
- ORNL

We received good ideas for our logbook from communication with these labs.

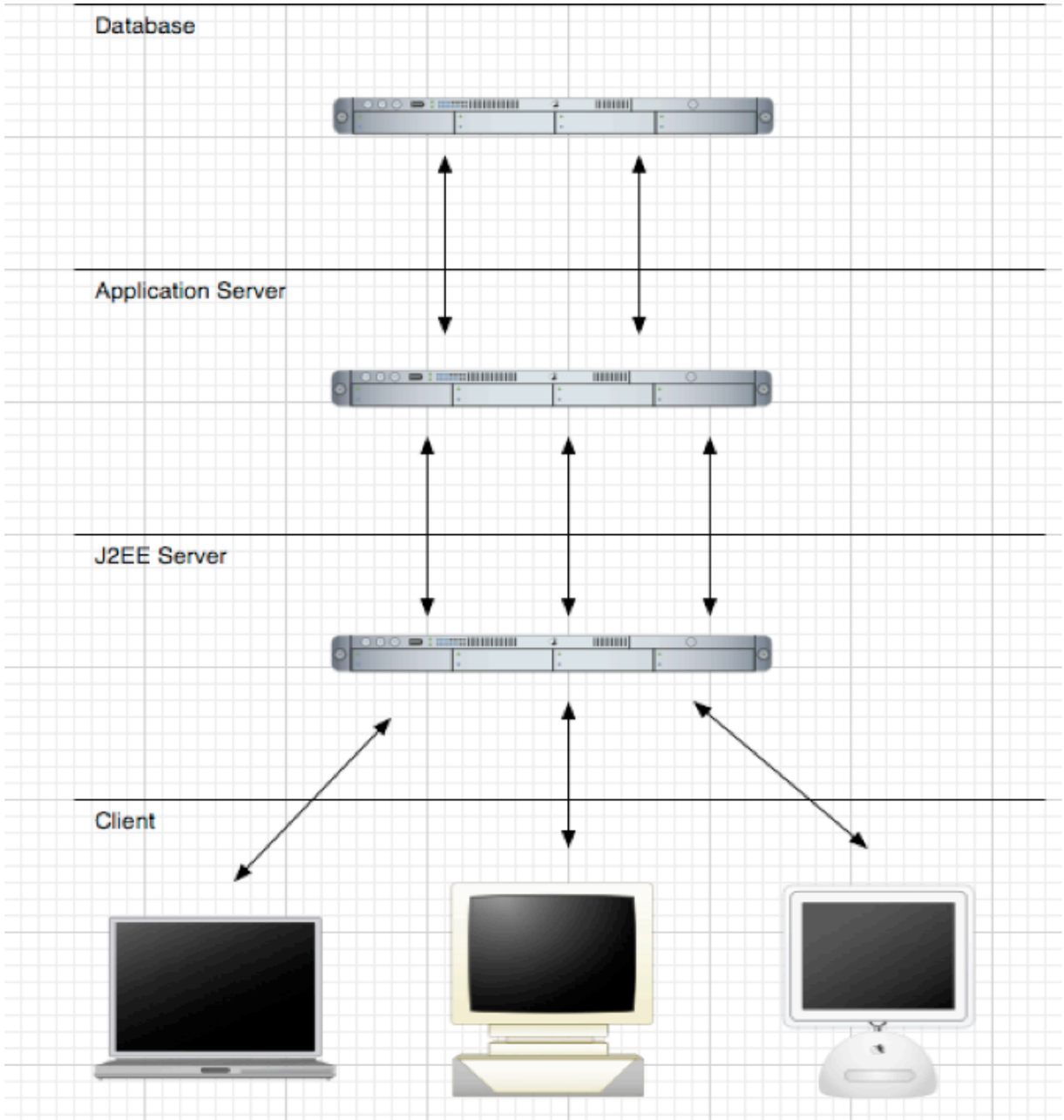
Development

- A working logbook was created in one week using Apple WebObjects 5.1 to demo preliminary user requirements.
- The demo was presented on May 28, 2002 and a decision was made to continue development.
- Detailed user and technical requirements were made along with a delivery schedule.
- The new logbook was designed to fulfill the initial requirements and to support future development.
- The model is compatible with JDBC 2.0 Databases
- The application deploys under J2EE 1.2
- We developed the application with WebObjects 5.1 on Macintosh and Windows platforms.

Deployment

- Deployed using Oracle 9i/AS J2EE on Solaris and used Oracle 8i as our database.
- The database tables were created and the first preview logbook was released by mid July.
- Frequent releases were made to support new feature requests and feedback. Accounts were limited to a few people for testing.
- The electronic logbook was officially released for general use on October 10, 2002 in advance of Front End commissioning.
- There were 112 entries in the first month.
- The number of entries have been rapidly growing.

Network Configuration



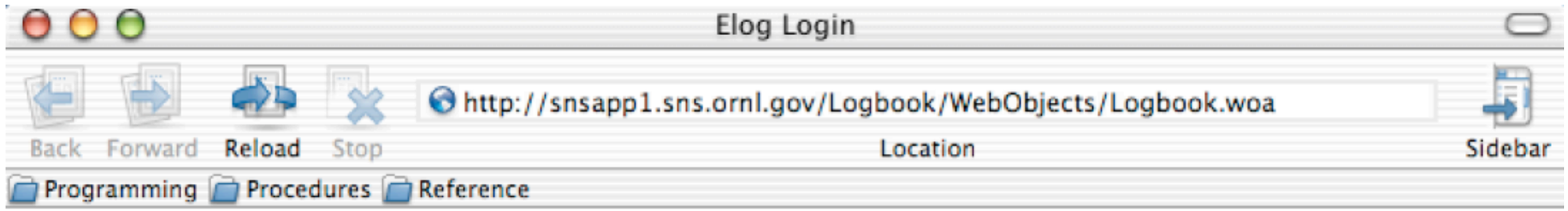
Application Server Hierarchy

- Application
  - Manage sessions
  - Application wide resources
- Session
  - Manage user state
    - User database record
    - User database connection dictionary
- Page
  - Generate the HTML for the page
  - Manage state for the page
    - Java class for page controller
    - HTML template
    - Bindings between page controller and template

Database Abstraction

- Connects to any JDBC 2 compliant database
- Database tables are mapped to Java classes
- Table columns are mapped to Java types
- “To Many” relationships mapped to arrays
- “To One” relationships mapped to an object reference
- Human readable text files map names in database to names Java model names
- Easy to change data sources
- Allows relationships across databases
- Graphical as well as programmatic interface

Login


Elog Login
Back
Forward
Reload
Stop
http://snsapp1.sns.ornl.gov/Logbook/WebObjects/Logbook.woa
Location
Sidebar
Programming
Procedures
Reference
SNS Logbook
Login:
user Id:
password:
Login

User Home

Profile Home Compose Daily Search Logout

Mon, Nov 11, 2002 15:37

THOMAS PELAIA II
Operations

Current LogBook: **Operations**

Bookmarks

- [ ] Ion Source Operation Checklist in EPICS
- [ ] Shift start

delete

Compose Entry

Edit | Add Attachments | Preview

Entry will be placed in the Operations Logbook

Equipment Category:

- Magnets
- Power Supplies
- RF Systems
- Test Equipment
- Diagnostics

*Title: Test entry

Content:

```
This is just a test entry
```

Upload an image and add it to the entry:

Browse... Add Image

Accepted image types: *JPG, GIF, PNG or TIFF*

* *Required Field*

Clear Commit

View Entries

Profile Home Compose Daily Search Logout

Wed, Nov 13, 2002 09:56

THOMAS PELAIA II
Operations

<---- month week day 06/27/2002 Go day week month ---->

Thursday, June 27, 2002

Topic: Orbit correction	THOMAS PELAIA II
June 27, 2002 13:15	reply bookmark thread

Equipment Group(s):
Logbook(s): Operations

We attempted to correct the orbit of the MEBT remotely from ORNL.
The MEBT was at LBNL.

Before Correction

As you can see, the vertical orbit error is already small. We will focus on flattening horizontally.

After Correction

Thread View

Topic: Test category entry — THOMAS PELAIA II

June 25, 2002 08:59 — reply bookmark thread

Equipment Group(s):
Logbook(s): Operations

```
This is an entry associated with categories.
```

Topic: Re: Test category entry — THOMAS PELAIA II

June 25, 2002 11:32 — reply bookmark thread

Equipment Group(s):
Logbook(s): Operations

```
It looks like categories are working.
```

Re: Re: Test category entry

Re: Test category entry

Search

Start Date:	06/01/2002
End Date:	07/15/2002
Author First Name:	
Author Last Name:	
Contents:	
Title:	test
Equipment Groups:	All Groups
Logbook:	Operations

Search

12 Entry(s) Display 10 items ◀ Page 1 of 2 ▶

Topic	Author	Post	Logbook
Test entry	THOMAS PELAIA II	Monday, June 17, 2002	Operations
Test entry	THOMAS PELAIA II	Tuesday, June 25, 2002	Operations
Test category entry	THOMAS PELAIA II	Tuesday, June 25, 2002	Operations
test entry	THOMAS PELAIA II	Tuesday, June 25, 2002	Operations
test	THOMAS PELAIA II	Tuesday, June 25, 2002	Operations

Future Features

- Add a help page
- More flexible entry views (column sort, etc.)
- More user customization (date format, etc.)
- Optional Java Client text editor for styled text entries
- Table editor
- MathML editor for equations
- Severity indicator (normal, note, repair, etc.)
- Add forms as needed
- Input integration with other applications (e.g. Epics EDM)
- More powerful, customizable search criteria
- E-mail notification to relevant groups
- Address user feedback